

CLINICAL REPORT

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Acute Inflammation of the Tibia—Death of the Shaft—Amputation—Progress of Reproduction.—NOTWITHSTANDING all that has been said and done to elucidate the subject of necrosis, there are still several circumstances in its history which remain very mysterious. One of the most interesting of these is the process by which exfoliations comprehending the whole thickness of a bone are reproduced. That the whole thickness of a bone may be regenerated, we have daily evidence afforded by the separation of large portions, and sometimes nearly the entire shafts of the tibia and humerus, without any permanent deficiency either as to size or strength in the bone affected. But we have seldom an opportunity of investigating by dissection the reproductive process at a stage sufficiently early for discovering the nature of the steps by which it accomplishes ossification. When patients die of necrosis, or are subjected to amputation to relieve them from the long-continued drain of the disease, the new bone is too matured for showing any trace of its origin. And in those

more uncommon cases of acute disease, in which the limb requires to be removed almost immediately after the death of the bone, sufficient time is not afforded for the developement of the new formation. In a former Report (August 1829, No. 101,) I related the case of a boy whose thigh was amputated on account of necrosis of the tibia supervening suddenly upon inflammation, and attended with suppuration of the knee-joint; but as only ten days had elapsed since the commencement of the disease, the limb removed did not yield any information with regard to the production of a new bone. And all the other cases of the same kind that have hitherto fallen within my observation were equally barren of instruction. In the case which is now to be detailed, the process of reproduction had advanced just to the extent desirable for pathological inquiry, and I think it will go far to put at rest the long agitated questions on this subject.

Beatrice Stokes, aged 13, strained her ankle by a false step on the 24th of March. She suffered little inconvenience until the following day, when the pain became so severe as to render her unable to walk. Rigors, vomiting, and headach, attended with intense pain in the leg, and the usual symptoms of inflammatory fever soon followed.

She was sent to the hospital from Tranent by Dr S. Alison on the 21st of April. The fever still continued undiminished, with occasional delirium, and the limb presented the appearance of phlegmonous erysipelas from the middle of the thigh down to the toes. It was red, swelled, and tense, except at the fore part of the leg, a little above the ankle, where fluctuation could be felt. Incisions were made with the effect of evacuating a large quantity of thick dark-coloured matter, and greatly relieving the patient.

Through the openings that had been made for this purpose, the bone was found extensively denuded, and as the discharge continued very profuse, with frequent rigors, delirium, and rapidly declining strength, it became necessary to amputate the limb. This was done on the 29th, above the knee, and though the recovery was tedious, in the first instance from exhaustion, and afterwards from exfoliation of the bone, it terminated in recovery.

When the limb was examined, it appeared that nearly the whole articulating cartilage of the ankle-joint had been removed by ulceration, leaving the bone bare and rough. The shaft of the tibia seemed to be dead throughout almost its whole extent, and had already undergone considerable erosion by the absorbents at its junction with the cancellated texture adjoining

the epiphyses. When the finger was carried along the surface of the dead bone through an incision that had been made to expose it, a dense case or shell was felt, which, when displayed by dissection, proved to be the periosteum greatly thickened, with osseous matter deposited in its substance. The membrane was traced distinctly from its sound part where covering the epiphyses, over the dead shaft, and no one who saw it could doubt that it afforded the bed or matrix in which the new bone was deposited. Where covering the posterior surface of the tibia, though detached from the bone, it had suffered comparatively little change, which rendered its recognition at other parts more certain. The new bone did not constitute a continuous shell, but was deposited in flat masses or scales of various extent, between which the periosteum intervened so as to insulate them completely from each other, or any portion of the old bone retaining its vitality. The osseous substance lay on the inner surface of the periosteum, with merely a fine film of the membrane covering it, but with a considerable quantity of soft gelatinous substance like coagulable lymph effused over this, so as to line the interior of the case. At several parts of irregular size and figure, the periosteum did not exist, and at these parts there was a corresponding deficiency in the new bone. These apertures resembled the *cloacæ*, as they are named, which exist in the investing shells that are formed in cases of necrosis, and are usually ascribed to absorption induced by the pressure of matter confined within the bone. But it seems more probable from this case, that the deficiencies in question depend upon the periosteum being destroyed at particular points in the commencement of the disease.

In explaining the history of this case, I think it may be reasonably supposed that the strain of the ankle occasioned inflammation of the joint, which extended to the tibia, and led to ulceration of the articular cartilages, and death of the shaft of the bone; that then suppuration took place under the periosteum, which having become at some parts disorganized, allowed the matter to pass outwards and distend the skin; that lymph was effused from the inner surface of the remaining periosteum, and also into its substance, so as to render it much thicker and softer than usual; and that then bone was deposited towards the inner surface of the membrane in numerous detached points, from which it was proceeding so as to make them coalesce, and constitute a cylindrical case to the shaft.

The engraving, Figure 1, Plate I. represents the appearance of the bone after being dissected and dried. The largest deficiencies in the shell were at A and B. The one at A has been enlarged by an incision which was made after the operation

to display the extent of dead bone, and before the existence of a substitute was discovered, but the one at B has not been altered.

Necrosis of the Tibia—Separation of nearly the whole Shaft—Recovery.—Catherine Moir, aged 10, from Orkney, recommended by Dr Traill, was admitted on the 23d of April. Her right leg presented the appearance of necrosis in an advanced stage, being altered in shape, and allowing the surface of the tibia to be seen and felt, through various openings between the knee and ankle. At the upper and fore part of the limb the exfoliation was visible for the extent of between two and three inches, and the substitute shell had been here so imperfectly formed, that the leg was quite flexible. The flexors of the knee-joint had in consequence of this yielding caused a remarkable contraction by bending back the upper end of the tibia, so as to make it form an angle with the lower portion. She stated that the complaint had commenced about four months before with swelling, redness, and pain of the leg, which was poulticed for a week, when a large quantity of matter was discharged, and the bone was felt bare. Several openings were made afterwards, but no exfoliations had separated.

On the 2d of May I removed the large piece of dead bone that presented itself to view, having previously divided a bridge of the shell which crossed it, and then found that a still larger portion which had constituted the opposite side of the cylinder still remained. This having been also extracted, together with a smaller part that lay nearer the ankle, the limb was laid upon an inclined plane and supported with splints. The discharge was very profuse for some time afterwards, and the sore was slow in taking on a healing action, but at length contracted and healed, with the exception of a small sinus which led towards the head of the bone. The limb had become much straighter, and gradually acquired considerable firmness. She was dismissed on the 5th of June.

Necrosis of the Lower Jaw—Separation of the ramus with the entire condyle—Recovery without alteration of shape or diminution of mobility.—William M'Haffie, aged 31, two years ago, suffered an ineffectual attempt to extract a grinding tooth of the lower jaw, the crown of which was broken off, and the root left. For some days afterwards intense pain was felt throughout the side of the face affected, and the jaw became locked. Some leeches were then applied, and he felt completely relieved. Seven months after this he was suddenly seized with intense pain, rigors and fever, and a large swelling of the neck formed, which when opened discharged a great quantity of matter. By persevering efforts the jaw, which had again become locked, was gradually opened sufficiently to permit extraction of the stump, after

which he felt so much relieved as to be able to resume his employment.

There still, however, remained a large hard swelling of the cheek, extending from the zygomatic arch to the base of the jaw, and some small pieces of bone came away from time to time through the opening in the gum that had been left by the tooth. The patient applied to me on the 23d of April in a state of great weakness and alarm, in consequence of a profuse bleeding which had taken place on that and the preceding day. He stated that some weeks previously very violent efforts had been used without success to extract a portion of the jaw which projected into the mouth. The hemorrhage proceeded from the cavity containing this exfoliation, and not only flowed into the mouth, but also issued on the cheek, through a small sinus which opened a little below the articulation.

Both orifices were stuffed with lint, and the patient was sent to the hospital to be under observation. Next day, as it appeared that the bleeding had continued pretty copiously during the night, the removal of the exfoliation could not with propriety be any longer delayed. I therefore made a free enlargement of the opening into the mouth, and extracted without any difficulty the piece of bone marked A. Figure 2, Plate I. There was no return of the bleeding, the swelling diminished, and the patient in a few days resumed his employment. Some weeks afterwards, he returned on account of another exfoliation which he felt protruding through the opening into the mouth. This was readily removed, and is represented in the same figure, marked B. It was plainly the condyle and neck of the jaw, and fitted so accurately to the portion formerly extracted, that it must evidently have been separated from it by violence, and not by absorption. It is probable that when this happened, the sharp edges of the broken fragments had injured the internal maxillary artery where crossing the neck of the condyle, and led to its subsequent ulceration. The remaining enlargement of the cheek quickly subsided, and the motion of the jaw became quite free.

It seems at first sight difficult to explain how recovery is effected in such a case as this, since the condyloid process, with its investing cartilage and synovial membrane, of course cannot be regenerated. When the articulating surface of the jaw dies, suppuration of the joint will be a necessary consequence, the whole articulating cartilage will be absorbed, and the surface corresponding to it, where the bone is still alive, covered with granulations. I should suppose that the surrounding periosteum will then become thickened, and have osseous matter deposited in it, so as to form a new bony shell, extending up to the neck

of the condyloid process, and which, when the exfoliation is removed, will contract, to form a solid mass in its place. Between the surface of this new bone and that of the glenoid cavity, a fibrous union will next ensue, sufficient, by its bulk, to prevent deformity from the deficiency of bone that must in some degree still exist, and flexible enough to allow the mobility required. That such is really the process pursued, will appear still more probable from the following case.

Necrosis of the head of the Humerus—Removal of the Exfoliation—Recovery.—In 1769, Mr White, of Manchester, read before the Royal Society a “Case in which the upper head of the *os humeri* was sawn off, a large portion of the bone afterwards exfoliated, and yet the entire motion of the limb was preserved.”—The patient was a boy of 14 years of age, who “had been suddenly seized about a fortnight before with a violent inflammation in his left shoulder, which threatened a mortification, but at last terminated in a large abscess, which was opened with a lancet a few days before his admission.” Through this opening, and another that had formed spontaneously under the acromion process, the *os humeri* could be felt and seen “totally divested of its bursal ligament.”

Mr White made an incision from the acromion process half way down the arm, protruded the head of the bone through the opening thus obtained, and sawed it off. At the end of two months he found that a large piece of the remaining bone had become loose, and easily removed it with a pair of forceps. The patient was perfectly cured at the end of four months from the operation. The arm was then not quite an inch shorter than the other, and he had the perfect use of it. In a work published some years ago,* I expressed my persuasion that this was not a case of caries, as it had generally been regarded, but one of acute necrosis; and the following very curious companion to it at a more advanced stage, seems strongly corroborative of that opinion.

Thomas Cairns, aged 13, from Saline, recommended by Mr Craig of Ratho, was admitted on the 30th of June, on account of a great enlargement of the right shoulder, attended with pain and discharge of matter. It was stated that ten months before he had fallen from a wall about four feet high among loose stones, and afterwards had been pretty severely handled by a bone-setter, who alleged that the humerus was broken near the joint. Inflammation and suppuration followed, openings for the discharge of matter took place at various parts, the joint became

* Treatise on the Excision of Diseased Joints, 1831.

stiff, and the patient's strength declined. In these circumstances, he was sent to town to be under my care.

As it was impossible to obtain any satisfactory information in regard to the condition of the joint by introducing a probe, I enlarged the sinus that led most directly towards it sufficiently to admit my finger, with the point of which the head of the bone was felt bare and smooth. The extreme firmness of the surrounding parts prevented a more free examination, but the information thus gained, together with the history of the case, convinced me that a portion of the bone was dead, and detached. I therefore extended upwards the incision already made, finding it necessary to use for this purpose both the knife and cutting-pliers, and then ascertained that the exfoliation lay loose in a bony case. Being unwilling to remove any of the new formed osseous substance which was destined to take the place of the old bone, I forcibly dilated the edges of the aperture until the shell gave way sufficiently to permit the extraction of the sequestrum, which was then easily effected. After the principal portion represented in Fig. 2, Plate III. was removed, some small pieces were found lying in the cavity, which proved to be fragments of the dense plate that had formed the convex surface of the head of the bone. The glenoid cavity of the scapula was divested of cartilage, but covered with a smooth firm velvet like lining of granulation. Recovery was delayed by unhealthy action of the sore, which assumed a phagedenic, and afterwards a sloughing character, but was so far completed on the 7th of September that the boy returned home with an arm not perceptibly shortened, and, though still stiff at the shoulder, nearly as useful as ever.

The only circumstance in Mr White's case which occasioned any doubts of its being an instance of necrosis, was the appearance of the portion of bone removed by him, Fig. 1, Plate III., as it did not present the convex shape of the head of the humerus, and certainly, from the diminution of its bulk as well as rough surface, had a carious look. But the case just related was unquestionably one of necrosis, and yet the exfoliation exhibited precisely the same appearance. This circumstance, therefore, can no longer be regarded as any objection to the opinion in question, and may perhaps be accounted for by the stronger vital power of the cancellated texture enabling it to resist the inflammation which proved fatal to the neighbouring bone, and leading to its destruction by absorption instead of mortification.

Caries of the Atlas and Vertebra Dentata—spontaneous dislocation of the Processus Dentatus—Death—Dissection.—I was asked on the 30th of March to see William Collins, aged 17,

in a house near the Infirmary, and recognizing the peculiar characters of disease in the first joint of the neck, advised his removal to the hospital. On both sides of his neck there were traces of scrofulous abscesses, some of which had healed and others still remained open, but his principal complaint was deep-seated pain at the base of the skull, extending forwards to the throat, at all times severe and greatly aggravated by motion of the head, which was consequently kept very steady either in the erect or horizontal posture. It was this remarkable fixture of the head, which, when turned, moved along with the trunk as if no joints existed in the spine, together with his emaciation and peculiar expression of countenance, indicative of habitual suffering and apprehension, that led me at once to decide upon the nature of the case. He stated that his neck had been swelled and sore for twelve months, but that the complaint which has just been described had not lasted more than eight weeks, and it was ascertained that a short while before that time he had been struck on the neck with a thick piece of wood.

The actual cautery was applied to the nape of the neck on the 6th of April, and a very decided improvement soon afterwards appeared. The pain became much less severe, the countenance lost much of its peculiar expression, and when the patient sat up in bed he rotated his head with comparatively little uneasiness. The hopes thus raised were not destined to be of long duration. In two or three weeks he again began to complain, and though occasionally a little relieved never afterwards presented the slightest prospect of ultimate recovery. He expired on the night of the 17th May, so gently that his neighbours in the ward were not aware of the event until it was discovered by one of the nurses. He had not been out of bed for three or four days, and on the day preceding his death complained of the pain being more than usually severe. It was found on dissection that the joints between the occiput and atlas were carious; that the ligaments connecting the *processus dentatus* to the margin of the *foramen magnum* were destroyed; and that the process had thus been allowed to press backwards out of its place until the space afforded for the passage of the spinal cord did not exceed a quarter of an inch in width from before backwards.

The disease of which this case affords an example is in many respects extremely interesting and important. It is very obstinate, but not necessarily fatal, as appears from preparations showing ankylosis of the bones affected without any remaining trace of caries. In reference to medico-legal questions it is of consequence to notice the extreme emaciation and weakness, peculiar expression of countenance, and fixture of the head, which

attend the disease, particularly in its advanced stage. The patient always keeps his head either *quite erect* or *quite horizontal*, and never moves it without the support of both his hands. It is also of importance, with the same view to remark, that the *processus dentatus* is very rarely fractured in this disease, being almost always merely dislocated.*

A curious circumstance connected with this disease is the absence of paralysis, which circumstance is so constant that it may be regarded as characteristic. Considering the proximity of the *medulla oblongata*, it seems surprising, that while caries in other parts of the vertebral column is so generally accompanied by paralytic symptoms, they should be wanting here, especially as the displacement which results from the disease, and consequent compression of the spinal cord, are greater than at any other part. Mr Lawrence thinks that the dislocation of the *processus dentatus* could not exist without producing signs of compression, and conceives that the position in which it is found on dissection must be produced immediately before death.† But we know that the nervous substance has great power of enduring gradual pressure, and of accommodating itself to the containing cavity. And the appearances which I have repeatedly witnessed in dissecting cases of this kind would lead me to believe that the dislocation occurs gradually. I have preserved one preparation in which it must have happened long before death, as the atlas and dentata are firmly ankylosed in the position they assume on such occasions. It may be added, that the palsy connected with vertebral disease does not seem to depend upon pressure, as it occurs where the spinal canal is not altered in capacity or direction, and yields to remedies that cannot produce any alteration in these respects. As an example of this, I may select a case which I saw along with Dr Beilby. The patient was a boy about 7 or 8 years old, who had for many months exhibited the most unequivocal symptoms of disease in the dorsal vertebræ. He was confined to bed without the slightest command over his inferior extremities, which

* On the trial of Robert Reid for the murder of his wife, before the High Court of Justiciary on the 29th of June last, it was stated by one of the witnesses for the prisoner, Dr Robertson, that, "Within this last fortnight it has occurred in the medical wards of the Royal Infirmary that a patient walking in the wards suddenly dropped down dead, which, he is informed, arose from fracture of the *processus dentatus*, the fracture being spontaneous, and the patient dead before reaching the floor." (Account of the Trial, published by Authority, p. 39.) If Dr Robertson referred to the case which has been related above, and I am not aware that there was any other to which he could refer, it will be seen that he has not been correctly informed in regard to it; and I think it right to notice this, lest the case should be again quoted in the decision of similar questions.

† Med. Chir. Trans. xiii. p. 412.

were rigid and extended, unless when spasmodically contracted. There was a large abscess in the back. The actual cautery was applied on each side of the spinous processes of the affected vertebræ, and in two days the voluntary use of the limbs was completely regained. The patient progressively improved, and the last time I saw him he was running about with other children in the country.

It does not seem possible at present to explain the difference of symptoms in question, but it may assist the diagnosis of diseases in the cervical vertebræ. There are at present in the hospital under my care two cases very illustrative of this. In one of them, the articulation between the occiput and atlas is affected, and in the other the vertebræ at the middle of the neck. In the former, with the exception of the peculiar stiff position of the head, there is nothing remarkable in the patient's attitude or movements, while in the latter, though the head can be moved with perfect facility, and presents a perfectly natural appearance, the whole body, from the middle of the neck downwards, is extremely stiff and awkward from imperfect paralysis.

Caries of the Os Calcis—Excision—Recovery.—William Malloch, aged 12, was admitted on the 6th of August. On the inner side of the left heel there were two openings about an inch distant from each other, which allowed a probe to enter the substance of the *os calcis* nearly to its centre. He had suffered from the disease for fourteen months, and was prepared to suffer whatever might be deemed requisite for its removal. As the sinuses opened very close to the posterior tibial artery, and consequently not far from the articulation between the *os calcis* and *astragalus*, I feared that it would not be possible to perform a radical operation except by amputation, but considered it right to try what could be done, with the view of rendering this extreme measure unnecessary.

Having made an incision about two inches in length, parallel and very near to the posterior tibial artery, I cut from the centre of it towards the tuberosity of the heel. The flaps thus formed were reflected so as to expose the *os calcis*, a large portion of which bounding the carious cavity was removed by cutting-pliers. The gouge was then freely used to scoop out the bone until the surface presented by it, when carefully sponged and examined, appeared perfectly free from disease. No bad symptom followed, the wound quickly contracted, and the patient was dismissed on the 9th of September. He now seems to be quite sound, as the cicatrix is firm, and the foot bears every kind of exercise without uneasiness.

Partial Amputation of Foot—Secondary Hemorrhage—

Recovery.—A——P——, aged 12, applied at Minto House in the beginning of May on account of a carious affection of the foot, which had existed for more than two years, and latterly reduced her general health to a very great degree. Her friends were willing that the foot should be amputated; and it seemed at first that nothing less severe would be sufficient for her relief, the whole of the tarsus being apparently implicated in the disease. By carefully examining the different sinuses, however, I ascertained that the joints between the *tibia* and *astragalus*, and *astragalus* and *os calcis* were sound, and therefore saw no objection to Chopart's operation, since, if any part of the disease were left by it, there would be plenty of room for its removal.

This proposal was carried into execution on the 20th of May. The articulating surface of the *os cuboides* was divested of cartilage and apparently dead, and the corresponding surface of the *os calcis* was discoloured. I thought it right to remove this portion, and easily did so with a strong knife. There was then nothing left in the stump at all suspicious. Fig. 3, Plate II. shows the bones of the foot after maceration.

Every thing went on well for a few days after the operation, but the wound bled occasionally during the following week. One of my pupils who had charge of the patient was repeatedly sent for on account of hemorrhage, which on his arrival he either found had ceased, or readily arrested by the application of cold. Thinking it necessary to interfere more effectually, as she had become extremely weak, and quite exsanguine in appearance, I separated the flap, and perceived arterial blood issuing from a point, which proved to be a crevice in a small tough white bag about the size of a large pea. Regarding this as a recent fibrinous formation, I tore it away with forceps until nothing was left beyond the mouth of the vessel to which it adhered, viz. the external plantar. Graduated compresses and a bandage were then applied. The cure met with no farther interruption; and the patient soon regained her strength.

It used to be alleged in objection to this operation, that the extensors of the heel being left attached, while the tendons of the flexors of the ankle were cut across, the stump would be pointed downwards, and rendered useless to the patient. Happening about twelve years ago to see a case at Göttingen, in which Langenbeck had recently operated, and understanding that he had done so previously on several occasions, I particularly inquired whether this inconvenience was experienced. Having been assured that it had not, I concluded that the objection was theoretical, and not founded on experience, and resolved that it should not deter me from performing the operation in any case

that might require it. I have accordingly operated six times with perfect success. In relating several of these cases in the foregoing reports, I took occasion to notice the objection which seemed to have prejudiced the profession against the operation, and endeavoured to remove it, as well by explaining that the tendons when divided acquired new attachments to the neighbouring parts, as by stating the facts that the stump was not rigidly extended, but remained completely flexible under the patient's control ; and that, so far from being useless, it allowed walking and other kinds of progressive motion to be accomplished without deformity or lameness. At the meeting of the Association for the Promotion of Science in Edinburgh in September 1834, I showed that a patient who had suffered partial amputation of the foot four years before could walk without perceptible defect, and move the stump at will.

Having thus endeavoured to vindicate the operation from an unjust prejudice, and establish its utility in practice, I read with regret the following report of the proceedings of the Medical Section of the British Association for the Advancement of Science at the Dublin meeting: " Mr Whatton (of Manchester) read a most interesting paper 'on partial amputations of the foot.' After an admirably drawn up memoir on the former modes practised in France and England, and some strictures on those known as Chopart's and Hey's operations, in which, from the removal of the attachments of the tendons of the principal muscles of the leg, and the aponeuroses covering them, those muscles were rendered completely useless for the purposes of progression ; and though the heel remained, the limb was scarcely so serviceable as a wooden leg. Mr Whatton proposed and entered into a minute detail of the longitudinal operation, which he had been long in the habit of performing ; and as evidence of its complete success, and the advantages attending it, he presented to the section a patient on whom he had so operated. The man walked stoutly without even a halt, could stand with ease on the imperfect foot, and seemed to suffer very slight inconvenience from the loss he had sustained, though in this case the three outer toes and metatarsal bones, the third cuneiform and cuboid bones, and a portion of the *os calcis* were removed. Mr Whatton exhibited casts taken from the foot at different periods after the operation, which, at the request of Professor Harrison, he presented to the Museum of the Royal College of Surgeons in Ireland.

" Dr Granville expressed his high admiration of the operation so admirably detailed, and proposed a resolution expressive of the particular approbation and thanks of the section, with a request, that the author of it would not wait for the formal volume

of the Transactions of the Association, to publish such an admirable and useful operation, for the benefit of the profession and the community.

“ Mr Carmichael, as the senior of the profession in Ireland, present begged leave to second the motion, and bore witness to the very inconvenient and almost useless condition of the limb, after the transverse operation of Chopart had been performed ; he did not hesitate to characterize Mr Whatton's operation as one of the most important improvements introduced into modern surgery.”*

I hope it is unnecessary to say any thing farther in addition to what has been already stated, in order to show that the objection thus revived, however specious in theory, is not supported by experience ; and the profession will, I trust, be proof against the hasty judgment of the Medical Section of the Dublin meeting. The operation which Mr Whatton advocates cannot be regarded as a substitute for the one he condemns, since in the cases that require the latter to be performed, the foot is diseased from one side to the other. The principle of removing part of the tarsus along with diseased metatarsal bones has been so long established, that it would be difficult to discover who had the merit of originating it. But the particular operation which Mr Whatton relates has been already so fully described and illustrated by Mr Aston Key,† (Figs. 1 and 2, Plate II.) that I am at a loss to understand how any claim to the merit of originality on account of it should at this time have been either advanced or conceded.

Dislocation of the Thigh Bone into the ischiatic notch—reduction on the thirteenth day after the accident.—Lawrence Smith, aged 18, was admitted on the 10th of July, soon after having fallen from the roof of a house, four stories high, where he had been painting a window.

He lighted on the pavement, and appeared to have struck the small of his back, where a slight discoloration was next day perceptible. At the time of admission, he had not the command of his inferior extremities, and could not evacuate either the bladder or rectum. He was bled, and next day cupped on the loins, which were afterwards fomented. Under this treatment, he soon regained the power of performing his evacuations, and moving his limbs, but still complained of great pain in the back, and could not alter his position in bed without much difficulty. Thinking that his complaints depended on concussion of the spine, I abstained from farther interference, in expectation that

* Athenæum, August 29, 1835, p. 665.

† Averill's Operative Surgery, second edition, 1825, p. 184.

the remaining part of his recovery would be completed by the resources of the system.

On the thirteenth day after the accident, wishing to ascertain what progress he had made, I desired him to try to get out of bed. He did so, and then presented an appearance of the right hip, that immediately suggested the suspicion of dislocation, which was confirmed by a careful examination of the joint. The limb when left to itself was slightly shortened and inverted, the hip and knee-joints were both a little bent, the hip appeared rounder than natural, and the head of the bone could be felt at the margin of the sciatic notch. By gentle extension the foot could be drawn nearly, if not quite to the same length as the other, and the toes could be turned outwards until their direction was straight, but not any farther than this. When freed from restraint, the limb immediately resumed its former position. The thigh bone could not be brought into the same line with the trunk, and when this was attempted by pressing it down upon the bed, the patient arched his back, which in its turn could not be depressed until the thigh was allowed to rise.

The patient was carried into the operating room, and laid upon a mattress on his sound side. A folded sheet was drawn under the injured thigh, with a small hair-cushion interposed between it and the perineum and fastened to the wall. Pulleys were attached by means of a skein of worsted to the middle of the thigh, so as to act in the direction which it assumed from the dislocation. I then placed a towel under the thigh, to elevate the head of the bone at the proper time, and held the ankle in my hand to effect the necessary degree of rotation. Extension had not been made for more than a minute, when the bone returned into its place. All the symptoms of the injury immediately disappeared, and the patient was soon dismissed quite well. A useful lesson may be drawn from this case as to the danger of overlooking dislocations in circumstances not particularly directing attention to their existence, and more especially when we can account satisfactorily otherwise for their symptoms. On this account, and also because, as Sir A. Cooper has remarked, “this dislocation is the most difficult both to detect and to reduce,” * I have related it fully.

Fracture of the lower Jaw at the symphysis.—“Jamais la fracture n’a lieu dans le point central de la longueur de la mâchoire appelé symphyse du menton.” † I have recorded in a former report an imperfect exception to this rule of Boyer’s, in the case of a man whose jaw was broken obliquely from the symphysis to one side. ‡

* Sir A. Cooper on Dislocations and Fractures, p. 68.

† Boyer, *Traité des Maladies Chirurgicales*, Tom. iii. p. 124.

‡ Sixth Report, February 1831.

Peter Kellie, aged 28, was admitted on the 27th of May, on account of fracture of the lower jaw, which was seated exactly at the symphysis, and extended perpendicularly downwards between the two front incisor teeth. It had occurred three days before from a blow with a fist. There was hardly any tendency to displacement, and the treatment was consequently very simple.

Fracture of the Tibia at its tuberosity, and Fracture of the Fibula, with dislocation of the foot backwards.—James Docherty, aged 34, while unloading a ship at Leith, on the 28th of July, was knocked down by a paving stone, and suffered fracture of both legs. The left tibia was broken just below the attachment of the ligament of the patella, so that the knee could not be bent without causing displacement of the broken surfaces,—the upper one during flexion being drawn forwards by the extensor muscles. There was great effusion into the joint, popliteal space, and the neighbourhood of the fracture. The limb was maintained in a straight position by a splint and foot board, and the swelled parts were kept moist by an acetate of lead lotion.

The right fibula was broken about two inches above the ankle, and the foot was dislocated backwards, causing a remarkable projection of the heel and shortening of the instep. The apparatus recommended by Dupuytren for this injury, viz. a cushion extending from the calf of the leg to the heel, and a splint passing over it, attached to the limb at both extremities, so as to press the displaced bone into its proper position, was tried without success. The cushion and splint were therefore placed on the front of the leg, and then no difficulty was experienced in keeping the foot forwards.

The occurrence of two such unusual injuries in the same person and at the same time is remarkable. It is only in fractures of the tibia near the tuberosity that a straight position of the limb is proper. In all other cases this position is not only unnecessary, but hurtful, by preventing relaxation of the gastrocnemii muscles, which can be effected only by bending the knee and placing the limb on its side or on an inclined plane. The practice introduced by Dupuytren for treating fractures of the fibula with displacement of the foot outwards, is so efficient that it seems unlikely he would have departed from its principle in treating that more unusual form of the injury in which the foot is dislocated backwards, without some good reason. I have therefore repeatedly tried the method he recommends, but always without success, and have no hesitation in recommending as preferable the plan which was pursued in the case that has just been related.

Compound Fracture—Recovery.—John Hodge, aged 35, collier, arrived at the hospital on the 4th of August, in a hearse, in which extraordinary conveyance he had travelled upwards of twenty miles, having been brought in it across Queensferry from near Kinross. He had suffered a very bad compound fracture of the leg fourteen days before, from the fall of a heavy stone, attended with such shattering and denuding of the bone, as, in the opinion of his medical attendant and another gentleman who joined him in consultation, rendered amputation advisable.

I found on examination that the fracture was comminuted and very oblique, that the upper extremity of the tibia projected through the wound, and that a considerable portion of the same bone was detached from the shaft. In other respects the case had a favourable appearance locally as well as generally, and I felt encouraged to confide in the goodness of the patient's constitution, by the strength of mind he had displayed in effecting his transport to the hospital by means of a carriage, which, however convenient for the purpose, would have been rejected by most people from the disagreeable feelings associated with it. Having made an adequate enlargement of the wound, I sawed off the projecting end of the tibia, and removed the detached portion of it, which was nearly three inches in length, but not more than half-an-inch thick. The limb was then laid upon an inclined plane, and properly secured with splints and bandages. The patient made a good recovery, and has retained a leg perfectly straight, and equally long with the other one.

Tumour of the Tibia—Amputation—Recovery.—Robert Thompson, aged 18, from Carrington, was admitted on the 14th of July on account of a large swelling of the left leg. It was situated immediately below the knee, and seemed to depend upon an irregular enlargement of the head of the tibia, occupying the ham, and projecting on both sides in front. Its consistence was soft, and unless when carefully examined, might have been supposed to fluctuate. The patient was thin, and of an unhealthy complexion. He stated that during the months of February and March last, he had twice suffered a bruise of the affected knee, by falling in the first instance from horseback, and afterwards from a cart. The first of these injuries was followed by little inconvenience, but the second immediately occasioned pain and swelling, which never ceased. The tumour increased slowly at first, but more rapidly since May, and of late had been enlarging very rapidly, with a corresponding increase of pain.

As this was evidently a case of malignant growth, amputation appeared the only remedy, and was accordingly performed at

the middle of the thigh on the 17th. The patient made a good recovery, and was dismissed quite well on the 12th of September.

The tumour when displayed by dissection presented the characters of the medullary sarcomatous structure in its most perfect form, the morbid substance completely resembling brain, except in being at some parts of a more dark or bloody appearance. The bone when macerated was found to have sustained comparatively little alteration. The growth had proceeded from its surface, the part of which corresponding to it was smooth and dead looking, surrounded by an irregular depression or groove from absorption. Beyond this there was an inconsiderable effusion of new osseous substance.

The first observation which occurs to me in regard to this case is the frequency of medullary growths from the upper head of the tibia, and the extreme similarity in the external form of the tumours which they constitute. I have amputated three limbs for swellings of this kind, which I really believe could not have been distinguished from each other, either before or after dissection. The reason of this resemblance is probably, that the soft texture of the disease accommodates itself to the resistance which the surrounding muscles oppose, and extends chiefly in those directions where they yield most readily to its enlargement.

In last Report I noticed the truly hopeless nature of operations performed for the removal of cerebriform growths proceeding from the eye-ball, and therefore think it the more necessary now to remark the comparatively favourable result of amputation for similar diseases of the extremities. From my own opportunities of observation, I should say that the tendency to reproduction of such tumours was greatest in the eye, next in the skin, then in the mamma, and least in the testicle and bones. It is impossible at present to account for the difference in this respect, but it unquestionably exists, and ought not to be lost sight of in practice. It would be no less difficult to explain some other peculiarities presented by the disease in different situations, as for instance the slowness to fungate which characterizes it when affecting the testicle. There is in my possession one weighing four pounds and a-half, which I removed from a gentleman who had had it repeatedly punctured, under the erroneous impression on the part of his attendants, that the swelling depended on accumulation of fluid. Though thus irritated for many months, it simply enlarged, without showing any disposition to fungous excrescence.

Laceration of the Arm—Amputation—State of the Vessels.—That torn arteries generally bleed little or not at all, has long been very well known, but the cause of this fact is not yet satisfactorily ascertained. The most probable explanations of it are,

1st, that the internal coats are irregularly lacerated owing to their greater friability, and coiled inwards so as to obstruct the vessel and promote coagulation; 2d, that when an artery is extended, the internal coats give way before the tough external cellular one, which hence collapses in a conical form at each extremity of the ruptured vessel; 3d, that both of these events take place and co-operate to produce the effect in question. As it is only by recording well-marked cases of their occurrence, that the proportionate frequency of these processes, and their respective share in arresting hemorrhage can be established, I am happy in being able to relate the following very distinct example of the second one.

John Mackie, aged 40, was brought up from Leith to the Hospital on the evening of the 21st of August, on account of an injury of his arm, which had been inflicted by a machine for grinding bark. From the elbow to the wrist, on the palmar side of the limb, the integuments were removed, the muscles were exposed, separated from each other, and at various parts torn across, and the ulna was broken into small pieces hardly exceeding an inch in length. In these circumstances there could be no doubt as to the necessity of amputation, which was immediately performed above the elbow.

Though it was stated that little blood had been lost at the time of the accident, it seemed impossible that both of the principal arteries of the fore-arm could have escaped rupture, and consequently there appeared a good opportunity for observing how the lacerated nature of the injury had prevented hemorrhage. The radial and ulnar arteries were, therefore, carefully traced down from the humeral, when it was found that the former pursued its course entire to the wrist, but that the ulnar was torn through about the middle of the arm. The lower end of the vessel lay exposed to view among the lacerated muscles and tendons. It seemed larger than natural, and as if distended by coagulated blood near the extremity, which was of a conical form, with a slender thread-like extension from its apex about an inch in length. The upper end lay more deeply imbedded under the origins of the flexor muscles; but when dissected out, presented the same appearance as that just described. *Vid.* Fig. 3, Plate I. When the vessel was slit open, its internal coat appeared quite sound until it reached the clot, which was about three quarters of an inch from the extremity, but at this point both internal and middle coats were abruptly divided as if by a knife. The conical termination having this part for its base, was formed entirely of the external or cellular coat, and adhered firmly to the clot contained. It would appear, therefore, that in this case hemorrhage was prevented entirely by ex-

tension and subsequent collapse of the external coat, and not at all by tearing and turning inwards of the internal ones.

Fracture and Laceration of the Arm—Amputation at the Shoulder-Joint—State of the Artery.—William Little, aged 50, was admitted on the evening of the 15th of September, almost immediately after suffering a very severe injury of the right arm from the machinery of a distillery, at which he was employed. The humerus was fractured close to the neck, and also lower down. The muscles on both sides of the bone were torn through in different places, and the whole arm from the elbow to the shoulder was bruised and lacerated. In these circumstances, amputation, being plainly the only resource, was performed at the joint,—the state of the soft parts not allowing any part of the humerus to be retained. The disarticulation was effected by transfixion,—the knife in the first instance being entered midway between the acromion and coracoid processes, directed downwards and backwards so as to pass through the joint, and then brought outwards and forwards to form a flap. It was next carried round the head of the bone inwards and forwards, so as to form a second flap answering to the first one. The arteries having been tied, the edges of the wound were stitched together, and covered with cold wet cloths. In the course of a few days union by the first intention appeared to be nearly complete, but a discharge of matter afterwards took place from one or two small points which had not healed, and still continues to a smaller extent.

The humeral artery was found quite detached from its neighbouring connections for the space of four inches, but did not seem to be ruptured or lacerated. It looked larger, and felt firmer than natural; and when laid open was found quite entire, but showed a clot lining its cavity to the extent it had been denuded. This clot, I need hardly observe, must have been formed previously to amputation, since the fluid blood contained in the vessel would certainly flow out upon its division. Its existence, therefore, must be attributed to the injury which the artery had suffered, and affords a good illustration of the effect which external violence produces on the contents of the blood-vessels.

Nævus of the upper Eyelid—Removal by Ligature.—Agnes Dyer, aged 12 months, from Dalkeith, recommended by Dr Renton, was admitted into Minto House on the 9th of September, for the removal of a large nævus. It occupied the whole of the left upper eyelid, and hung down over the eye so as to conceal it from view in front. The tumour was of a dark colour, and presented in other respects the usual characters of venous erectile tissue. It had been first observed six weeks after birth, and was rapidly increasing. As the disease extended from the eye-

brow to within a line of the roots of the eyelashes, it was feared that the contraction consequent upon either excision or ligature would cause eversion of the eyelid; but this seemed a smaller evil than the existing, and still more the aggravated state of the case, which might be expected from the activity of the morbid action, if allowed to proceed unchecked. It was, therefore, resolved to operate, and by ligature, as the part affected was favourably situated for this method, while excision appeared likely to occasion troublesome hemorrhage.

A strong silk thread was passed through the root of the tumour so as to divide it into four different portions, each of which was effectually strangled by the ligature surrounding it. No bad symptoms followed. The swelling became black, shrivelled, and fell off on the fifth day. The raw surface healed kindly, and, contrary to expectation, cicatrized without eversion of the eyelid.

Nævus resembling a fatty Tumour—Removal by Excision.—Agnes Brown, aged 4 years, was brought to Minto House, on the 19th of August, on account of a tumour seated over the lower part of the back of her neck. It was round and flat, about two inches in breadth, and having the lobulated shape, as well as peculiar consistence, of an adipose growth. The surface was not altered except at the centre, where, for about the extent of a half-crown piece, it was white and depressed. This appearance resembling a cicatrix was attributed to the effect of inoculation with vaccine matter, which had been practised twelve months before. It was stated, that the tumour first attracted attention when the child was nine months of age. I afterwards ascertained that the swelling previous to vaccination had a purple colour, and that subsequently there had been a remarkable diminution of size. The tendency to enlargement again returning, had rendered the tumour larger than ever, and was rapidly increasing it. Not being aware of these latter circumstances at the time, I concluded that the disease depended merely upon an adipose tumour, and proposed excision, which was readily acceded to.

On making a free incision through the integuments and morbid growth, I was surprised to see arterial blood springing out in numerous jets, but having then discovered the true nature of the tumour lost no time in completing its removal. So soon as this had been accomplished, the bleeding was restricted to one large vessel, which showed its open mouth on the surface of the fascia. A ligature having been applied, the edges of the wound were stitched together. Union by the first intention did not take place, but the wound healed kindly by granulation. The tumour, though in some parts vascular, was in general quite similar to the ordinary adipose structure, and was deemed such

by several of my practical friends who examined it. This case affords a useful lesson; since, if the tumour had been less easily removeable or the child younger, serious consequences might have attended the error of diagnosis in regard to its nature.

Nævus of the Scalp—Removal by Excision.—A child aged 12 months, from Dunbar, was admitted into the hospital on account of a vascular tumour growing from the scalp near the vertex. It was of the size of a large strawberry, which it resembled in colour and form. It had appeared when the child was 3 weeks old, and was increasing. As the morbid growth, even though it were to become stationary, could not fail, from its situation, to become extremely inconvenient, and even dangerous, there could be no doubt as to the propriety of its removal, which was readily effected by excision, the wound healing almost entirely by the first intention, so that the child went home a few days after the operation.

I have mentioned this case as affording an example of the circumstances in which excision is more convenient for the removal of erectile tumours than the ligature. The former method should be preferred when it can be executed without the risk of serious hemorrhage, and without taking away so much of the integuments as to prevent union by the first intention, because it is effected more quickly, with less pain, and leaves a smaller cicatrix. I have frequently cut out tumours of this kind from the face with hardly any perceptible mark, while the ligature must always leave one. It has been thought that a narrow base or neck was a reason for resorting to the ligature; but in general the rule should be reversed, and the ligature restricted to those cases in which the attachment of the disease is so extensive as to forbid any expectation of the wound necessary for its excision healing by the first intention.

Fibrous Tumour of the Breast—Removal.—Mrs Smith, aged 21, was admitted on the 17th of July, for the removal of a tumour in her right breast, which had been first observed about three years before, and was increasing with progressive rapidity. It was of firm consistence, and very unequal surface, but quite distinct from the surrounding tissues. It occupied the situation, and was about the size of the mammary gland. The operation was performed in the usual way, and the patient was dismissed on the 8th of August.

The tumour when dissected presented an appearance different from what had been expected, and of an unusual kind. It possessed the firm consistence of the ordinary fibrous tumour of the breast, the chronic mammary tumour of Sir A. Cooper, but instead of constituting a single mass with botryoidal or nodulated surface, it was composed of many distinct masses closely

connected together towards the centre by cellular substance, but more loosely at the circumference, where there were some small masses nearly quite detached. This description agrees with that of Mr Abernethy's tuberculated sarcoma, so far as the structure is concerned, but differs from it in regard to the seat of the disease, which was not in the lymphatic glands, and in the absence of malignant action, which he attributed to that formation. Sir A. Cooper has not mentioned the tuberculated sarcoma as occurring in the mamma or its neighbourhood, and, on the whole, I am inclined to consider the growth in question as merely a modification of the ordinary fibrous tumour.

The most remarkable example of this very common affection which has come within my observation, occurred in the hospital the summer before last, and having been omitted in the former reports, may be mentioned here. The patient was Janet Macdonald, aged 66, a woman of small stature, but apparently healthy constitution, who, for the long period of thirty-five years, had laboured under a tumour in her breast. At the commencement of her complaint, she consulted the late Mr Benjamin Bell, and had frequently been advised to have the disease removed, but as it did not until lately grow so large as to prove seriously troublesome, she declined any interference. During the twelve months preceding her application to me, the activity of the morbid growth became greatly increased, and the tumour in consequence attained a size and weight which rendered it insufferably oppressive. The operation was performed without any difficulty, and the wound healed by the first intention. The mamma, greatly attenuated, was spread over the lower part of the tumour, which weighed between seven and eight pounds.

Strangulated Inguinal Hernia—Operation—Recovery.—Samuel Lloyd, aged 19, was admitted on the evening of the 25th of October, labouring under a strangulated scrotal hernia of the right side. He stated that the rupture had existed from infancy, but seldom given him much trouble, seldom protruding, and being in general easily reducible. The symptoms commenced about 5 p. m. after a long walk, and were extremely severe. The efforts to vomit were incessant, the abdomen was much distended, and he complained of intense pain here as well as in the tumour. He had injections repeatedly administered, was put into the warm bath, and lost twenty ounces of blood from the arm. Reduction was carefully tried again and again without success, and at 2 a. m. next morning, it appeared to my colleagues and myself that any farther delay would be unsafe.

Having opened the sac, I found a complete loop of intestine, the ileum, and a large portion of omentum. I divided the stricture freely, directly upwards, and returned the bowel. The

omentum adhered to the extent of about half an inch to the sac at its neck, but was otherwise seemingly quite unaltered in texture. I therefore divided the adhesion, and returned it. The *tunica vaginalis* containing the testicle was entire, and did not constitute the sac. The patient had a threatening of inflammation in the course of the day, which yielded to leeching and fomentation. His bowels were freely evacuated, and he gradually became free from all uneasy feeling. The wound healed by the first intention, and he was dismissed on the 16th of November.

This case illustrates two points of considerable practical importance, viz. the advantage of dilating the stricture very freely when the protrusion is large, and the propriety of not cutting away the omentum when it is sound. The great danger of large intestinal hernia is inflammation, and of course the risk of this will be increased by forcible handling of the bowel. But when the stricture is divided merely to such an extent as would permit the intestine to be pushed through it, provided no resistance was opposed to it from within, reduction always proves difficult and laborious. Therefore, though a very slight enlargement may be sufficient in small ruptures, as those usually met with in the femoral opening, the enlargement should be more than proportionally free, when the quantity of intestine is of any considerable size. When the omentum is thickened and indurated, its return into the abdomen would be not only difficult, but, if effected, in all probability injurious. Excision of the redundant part is therefore not only warrantable, but necessary. If its texture remains sound, there is not the same objection to reduction, and the cut surface, from bleeding more freely, might require the application of so many ligatures as would greatly increase the danger of inflammation.

Tumours of the Groin and Scrotum—Removal.—James Jack, aged 43, recommended by Mr Guthrie of Brechin, was admitted on the 1st of August, on account of a large swelling, or rather two swellings which occupied the left groin, and the same side of the scrotum. Fig. 3, Plate II. The inguinal tumour was of an oval form, being 14 inches in length, and 10 in breadth. It presented the external characters of a medullary growth, having a reddish colour, an irregularly nodulated surface, and a soft almost fluctuating consistence. The scrotal enlargement had the appearance of an inguinal hernia, and its consistence was not unlike that of an old irreducible epiplocele, but, when carefully examined, it was found to depend on a morbid growth of the part itself. The tumour was distinctly defined in the perineum, and readily recognized to be an adipose sarcoma or simple fatty swelling. The testicle could not be distinguished by external examination, but was felt by the patient when subjected to pres-

sure, and seemed to be about the centre of the enlargement. The tumour of the scrotum had existed about three years, and that of the groin eighteen months. They were both increasing, particularly the latter one, which was also painful, and had ulcerated superficially to a small extent at one of the most projecting parts.

On the 4th of August, I removed the inguinal tumour by making two semilunar incisions, so as to include a sufficient portion of integuments, and then carefully dissecting it out. It was firmly bound down by layers of strong fascia, and adhered closely to the great vessels of the groin, but being surrounded by a dense smooth capsule was taken away quite entire. I then made an incision from the lower part of the perineum upwards, in the course of the raphe to the external ring, and another transversely from its centre to join the former incision. The flaps thus formed were dissected aside, so as to display the nature and connections of the scrotal tumour, which proved to be, as had been supposed, a simple fatty growth, but inseparably adherent to the testicle and cord, which lay completely imbedded in it. The upper part of the tumour was turned down to expose the cord, at its exit from the external ring, where the vessels were divided and held until the removal of the tumour was completed. The arteries were then tied, and the edges of the different incisions stitched together. The patient suffered no bad consequence, was able to walk about in a fortnight, and went home on the 2d of September.

The tumours weighed together four pounds nine ounces, the one from the groin being three pounds one ounce, that from the scrotum one pound eight ounces. When a section was made through the former, instead of the medullary structure existing alone or together with cysts, which had been expected, it displayed a uniform mass of adipose substance, inclosed in a very strong dense capsule, which by its tension had prevented the true nature of the case from being recognized. The scrotal swelling presented the appearance of several distinct fatty tumours, but they were found to be all connected together. The *tunica vaginalis* contained no fluid, and adhered at part of its extent to the testicle. This case seems interesting from the deceptive appearance of the morbid growth, which in the scrotum so closely simulated hernia as to have been considered of this nature, and in the groin resembled a medullary tumour so perfectly, as to deceive myself and colleagues who examined it.

Hydrocele extending up to the internal opening of the Inguinal Canal—Injection—Recovery.—Alexander M'Culloch, aged 22, was admitted on the 13th of March on account of a hydrocele of the right side. The tumour presented no unusual appearance except a slight fulness of the inguinal region, and the

usual characters of the disease, viz. insensibility to pressure, fluctuation and translucency were very well marked. But when the patient assumed the horizontal posture, it was observed that the scrotal swelling became much less tense, and could with very slight pressure be completely transferred upwards, so as to leave the testicle uncovered by fluid. When this was done, the inguinal enlargement became much increased and more tense, and could be distinctly felt extending to the peritonæum. It was affected by coughing very remarkably, and indeed more so than hernial swellings usually are.

Though two of the most characteristic features of hydrocele, viz. non-displacement by pressure, and non-disturbance by coughing were thus absent, there could be no doubt in regarding the case as of this nature. And as the disease had not been congenital, having existed only for three years, the peculiarities which have been mentioned seemed explicable, by supposing that the neck of the *tunica vaginalis*, by becoming obliterated merely at the inner opening, allowed the water to ascend higher than usual. The operation by injection was, therefore, performed in the ordinary way, and promised to be successful from the effects which followed it. But when the cure seemed to be completed, it was found that if the patient placed himself in the erect posture, a small quantity of fluid descended from the inguinal part of the sac, and before long the water proceeding from this source increased so much, as to restore the complaint very nearly to its original state.

It then occurred that the wine injected had not sufficiently affected the upper portion of the *tunica vaginalis*, and the operation was repeated so as to obviate this imperfection. After the injection had been thrown in, the patient was laid horizontally to allow it to flow up to the full extent of the cavity, and thus exert its influence over the whole surface,—a method which seemed safer than attaining the same object by forcibly distending the cavity by injecting a larger quantity of wine. The result proved completely successful, and the patient was dismissed cured.

Cancer of the Penis—Amputation—Recovery.—John Gow, aged 56, was admitted on the 2d of June. The penis in the situation of the glans was considerably swelled, irregular in form, and extremely hard. The indurated part projected on both sides, so as to give a flattened appearance to the organ, but the orifice of the prepuce was so small that the state of the swelling inclosed could not be at all observed through it. In the right groin there was a moderately large, fixed, and very hard glandular swelling. The patient complained of occasional lancinating pain in the penis and uneasiness in the groin. He stated that

in October last he felt difficulty in voiding his urine, and observed that the prepuce, which formerly could be readily and completely retracted, was somewhat tightened at the orifice. Soon afterwards a swelling commenced at the neck of the glans, which gradually increased in extent and hardness, and about the middle of January became painful at times. The enlarged inguinal gland, he assured us, had existed for at least four years, but of late had considerably increased.

The prepuce was slit open, in order to ascertain the state of the glans more fully, and at the same time remove the effect of any irritation that might be caused by the contraction of its orifice. Acetate of lead lotion was then applied to the swelling, and leeches with warm fomentations were employed to discuss the inguinal tumour. A marked improvement followed this treatment, and it was hoped that the formidable aspect of the disease might have proceeded entirely from the continued influence of local irritation. But it soon appeared that this favourable change was confined to the prepuce, and that the glans remained as hard and irregular as ever, while the patient still complained of lancinating pain. In these circumstances the carcinomatous nature of the complaint could not be doubted, and the removal of the disease promised little benefit in the existing condition of the inguinal gland. I was, therefore, satisfied with continuing to use merely soothing measures until the 27th, when, from the repeated occurrence of hemorrhage to the extent each time of half a pint or more, it seemed necessary to interfere more actively.

As the induration terminated abruptly about a quarter of an inch beyond the neck of the glans, and the remaining part of the organ seemed quite sound, I resolved to amputate the penis. The operation was performed very simply, by one decided sweep with a moderate sized amputating knife, and without any previous retraction of the skin. The two dorsal arteries and the two arteries of the *corpora cavernosa* having been tied, cloths moistened with cold water proved sufficient to restrain the slight oozing of blood that still continued. The patient had not a single bad symptom, and the wound was quite cicatrized on the 20th of July, when the size and uneasiness of the inguinal swelling had greatly abated, and the general health was much improved. Difficulty then began to be experienced in micturition, from the orifice of the urethra contracting, and after trying in vain to remedy this by passing slender bougies, I dilated the aperture with a sharp-pointed bistoury, guided upon a probe, and afterwards found it easy to preserve the orifice of its full width.

Hydrophobia.—Alexander Elder, aged 28, night watchman, was admitted at half-past twelve P. M. on the 15th of September,

exhibiting all the symptoms of confirmed and violent hydrophobia. Every few minutes he was seized with convulsions beginning in the face and throat, but rapidly extending to the whole body, which was frightfully contorted in all directions. At these times he emitted the most dreadful screams or yells, altogether unlike the usual expressions of suffering, and rather indicative of sudden intolerable horror. He frequently grasped his throat, and pressed upon his stomach, where he said all his distress lay. Thick frothy saliva was continually ejected on every side with great force. His countenance was strongly expressive of apprehension and despair, and his eyes had a remarkably wild bloodshot appearance. Pulse 116, full and not easily compressible. He suffered greatly from thirst, but would not attempt to take water or other fluid from a cup. When it was presented to him in a spoon he sat up in bed and seemed to concentrate his whole powers for the exertion. He eyed the spoon with a fixed gaze, as if fascinated by it, then gradually approximated his mouth, and finally, as it were, threw himself forward with a violent convulsive effort, during which it was doubtful whether he succeeded in swallowing any of the liquid or not.

It was ascertained that about two months before, having occasion to destroy some of the unclaimed dogs which were proscribed at that time, he had been bitten by one of them in the hand and leg, and that both wounds had healed in the course of eight days. During the week preceding his admission, he was said to have indulged more than usual in drinking spirits, being generally of sober habits. On the 11th, he complained of pain in the hand that had been injured. On the morning of the 13th, he felt unwell, having no appetite for food, but no aversion to drink. During the following night while on duty, he was offered a glass of whisky, which he swallowed with difficulty, as he alleged from his hand shaking. Next morning, when attempting to take some tea, he was observed to grasp the cup suddenly with both hands, and although he endeavoured repeatedly to swallow its contents, he was unable to do so, from the violent spasms which were always induced by the trial. General convulsions soon succeeded, and the disease appeared to have been completely formed about this time. He was seen by Bailie Macfarlan in the evening, who administered some antispasmodics, and sent him to the hospital.

As the patient expressed a great desire to be bled, I made this be done to the extent of forty ounces, which seemed to lessen the violence, though it did not diminish the frequency of the paroxysms. Some doses of calomel were then administered, but it is doubtful whether they were swallowed. About six o'clock he said that he felt much easier, having had no spasm for fif-

teen or twenty minutes. The pulse at this time was rapid and small, and his breathing a little embarrassed. A few minutes afterwards the muscles of the pharynx were convulsed, and death terminated his sufferings.

On dissection, no morbid appearance could be observed except unusual vascularity of the pharynx and stomach. It may be noticed that this is the only case of hydrophobia which has occurred in Edinburgh for the last thirty years.

PLATE I.



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 1.

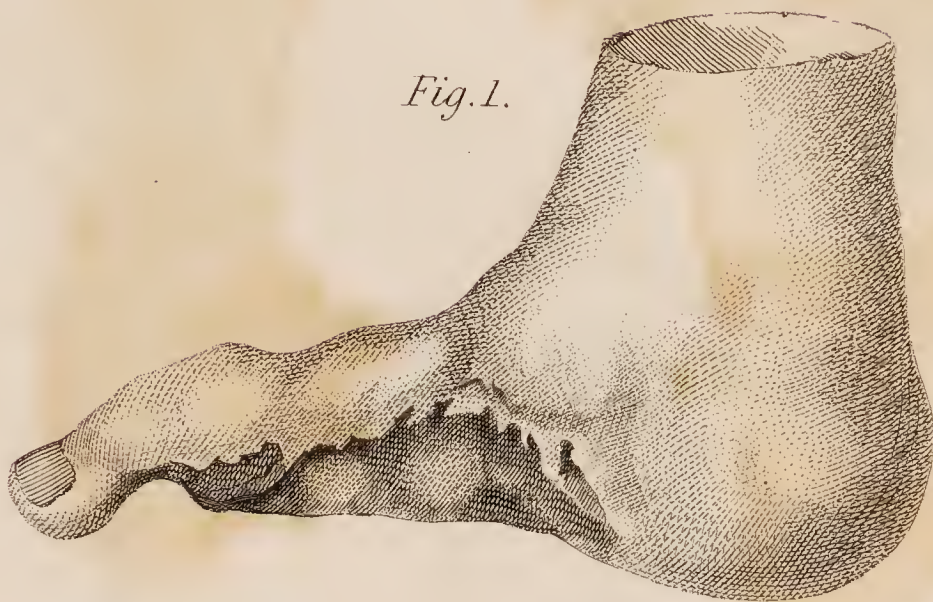


Fig. 2.



Fig. 3.



Fig. 1.



Fig. 2.



Fig. 3.

